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Ground Is Broken For New Cogeneration Plant

BETHPAGE, New York — On March 31, Grumman Chairman Jack Bierwirth and President John O'Brien broke ground for the new cogeneration plant that will provide electricity and steam for Grumman's Bethpage facilities.

Speaking to over 150 local government officials and guests, Grumman President John O'Brien said the plant is vital to the company. "Electricity is in short supply and Grumman is pressed to realize every operating economy to stay competitive," he said. "When our cogeneration plant comes on line it will produce a new supply of power for Grumman at competitive prices."

TBG Cogen Partners will construct, own and operate the plant. TBG Cogen is a joint venture of General Electric Company's Turbine Business Operations, Brooklyn Union Gas Company and J. Makowski Associates, Inc., a venture management company. The group has leased approximately two acres of Grumman property near the intersection of South Oyster Bay Road and Hicksville Road.

The concept of cogeneration is simple. Oil or gas is burned to produce steam. That steam is turned into electricity.

"The joint venture has agreed to sell the electricity to Grumman for 15 years at a 20 percent discount from our present commercial rate," said

Dean Cassell, Grumman Corporation vice president of Product Integrity and Environmental Protection. "The new plant will save Grumman about \$3.5 million a year in energy costs."

The \$64 million plant, scheduled to be on line in July 1989, will generate 50 megawatts of power. Grumman will use 30 megawatts and the remainder will be made available to LILCO.

"Grumman has been an integral part of the heritage and tradition of Long Island," Nassau County Executive Tom Gullotta told the audience. "With the dedication of this project today, Grumman makes a further commitment to the residents of Long Island."

Other speakers included Delbert Williamson, vice president and general manager of General Electric's Turbine Marketing and Industrial Power Systems, and Elwin Larson, president and chief executive officer of Brooklyn Union Gas.

After the speeches, Jack Carroll, vice president of Community Affairs, swung open the tent wall behind him and revealed a pile of dirt and shovels. Joining in the first dig were: Bierwirth; O'Brien; Williamson; Larson; Bill Cotter, New York State Commissioner of Energy; Bill Peterson, Nassau County Commissioner of Labor; Angelo Delligatti, Supervisor, Town of Oyster Bay; and Gullotta. ■



A Powerful Beginning. Sharing in the first dig at the ground breaking ceremony for the new cogeneration plant in Bethpage are: (from L to R) Town of Oyster Bay Supervisor Angelo Delligatti; NAVPRO Commander Capt. Wendell Brown; Grumman President John O'Brien; Nassau County Executive Tom Gullotta; Grumman Chairman Jack Bierwirth; and Consumer Protection Board Executive Director Richard Kessel. (Photo by Bob Settles)



STARS Ship's Enterprise. In early afternoon of April 1 in Melbourne, Florida, the first Joint STARS E-8 aircraft took off on its maiden flight. The radar system's antenna, when installed in the aircraft, will be mounted inside the long, white protuberance behind the nose wheels. See story on page 2. (Photo by Bob Sagliocca)

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Special Mission Mohawk Undergoing Army Tests

STUART, Florida — Equipped with a new forward looking infrared system and a high resolution TV system, an OV-1D Mohawk is now undergoing flight tests with the U.S. Army. The flight evaluations are expected to last a minimum of eight months.

In June of last year, Grumman, Westinghouse, SFENA Corporation and Aerospatiale entered into a joint venture to equip this special mission Mohawk. "After the Army had expressed a need for this new capability for the Mohawk, the four firms decided to fully fund the program to promote a new mission for the Mohawk," says Tom Doyle, program vice president—OV-1. "Our ultimate goal is to eventually incorporate these changes into a portion of the OV-1 fleet."

Westinghouse supplied the FLIR system; SFENA and Aerospatiale provided the TV system and a ground data link station mounted on a truck bed; and Grumman integrated the systems into the Mohawk.

The current Mohawk OV-1D fleet in the Army has a multi-mission capability. Within 30 minutes, Army personnel can equip a Mohawk for a radar/photographic mission or an infrared/photographic mission. The cables are already in place for both missions; pallets can be easily replaced for a new mission capability.

Over the past three decades, Grumman has made many improvements to the Mohawk aircraft and its radar system. However, the infrared detection system has become antiquated. It's a vertical infrared system — the pilot must fly directly over the targets on the ground to use the system. In addition, the old system has become unsupportable in the field. Parts are scarce.

The new forward looking infrared system mounted on the belly of the Mohawk can provide 360-degree surveillance. The movable turret — similar to the A-6 TRAM — can be controlled from inside the cockpit.

In addition, a high resolution, telephoto TV camera has been mounted under one of



TV Guide. At Stuart Operations in Florida, Grumman test pilot Bob Ward checks out the recently installed high-resolution TV camera on the wing of the OV-1 Mohawk. The special mission Mohawk also is equipped with a forward-looking infrared system. The Army is testing the OV-1 now.

the wings. This gives the Mohawk crew a telephoto view from the cockpit in real time.

"This specially equipped Mohawk will greatly increase both the night and day mission capabilities of the OV-1," says

Doyle. "The Mohawk has been serving as the Army's primary imagery surveillance platform for over 30 years. I think we've come up with a new combination that will extend the life of the Mohawk another decade." ■

Appointments

The following Grummanites recently received new assignments:

Aircraft Systems

Bethpage Operations: Gerard Dorsey, program manager, E-2C and C-2A programs.

Configuration Data Management: Stephen C. Weber, assistant manager, E-2/C-2 programs.

Integrated Logistics Support: Sze Chin, engineering specialist, Equipment Design Engineering; David H. Johnston, engineering specialist, ILS Systems Concepts; John Robinson Jr., engineering specialist, Maintenance Trainer Engineering; Raymond W. Gaddis, section head, Site Requirements; Joseph F. Casey, manager, Project Management.

Manufacturing Engineering: Mike Marcari, producibility representative, F-14D Program; Mike Hlinko, producibility representative, F-14A Program.

Parts Fabrication Center: Robert M. Smith, manager, Material Control; Charles Eiserman, manager, Tool Design; Robert J. Nagy, manager, Methods.

Technical Operations: Victor Hanna, project leader, Structural Sciences, F-14 Program; Charles Keenan, engineering specialist, Advanced Power and Distribution Systems; James Casey, engineering specialist, High Gain Multibeam Antennas; Peter Zuzolo, technical specialist, Radar Cross Section Analysis; Anthony Tornabe, assistant group head, Structural Design; Edward Bumby, engineering specialist, System Simulation. ■



Just The Beginning. During its first round of flight tests, the Joint STARS E-8 plane will not carry the radar equipment; Full systems testing will begin later this year. (Photo by Bob Sagliocca)

Joint STARS Plane Begins Flight Tests

The Joint Surveillance Target Attack Radar System (Joint STARS) E-8 aircraft began its first series of flight tests on Friday, April 1, in Melbourne, Florida. The plane took off at approximately 1:15 p.m. and completed its flight about two hours later.

Joint STARS is an Air Force/Army program being developed by Grumman Melbourne Systems Division. It is a radar system designed to look deep into enemy positions from well back over friendly territory. It will detect, locate, classify and track moving and fixed targets in all weather conditions, giving

battlefield commanders early warning of secondary troop and tank buildups.

The plane is a modified and refurbished Boeing 707. During the initial test flight program, the handling and flight characteristics of the E-8 will be checked.

The plane will not carry the Joint STARS radar equipment being developed by Norden Systems during this round of tests. However, extensive tests will be made of the cooling and electrical systems needed for Joint STARS. Full systems testing will be conducted later this year.



Circuit City. Pete Freely inspects circuitry in Benton Park, Pa., where Grumman will build printed circuit boards for Litton.

Grumman To Make Circuits For Litton

Grumman Electronics Systems Division has won a \$600,000 contract to supply Litton with digital printed circuit boards.

Grummanites at the Benton Park, Pennsylvania, facility will build and test circuit boards for the Tactical Air Operations Module, a computerized command-and-control workstation. The system is used on the battlefield by the Marines and Air Force to coordinate aircraft traffic.

The pre-production phase of the contract starts in July. Grumman will produce some of each type of board in the system — 304 in all. In this manner, Grumman will fine-tune its manufacturing process and test procedures to Litton's qualifications.

There are many more circuit boards to come — the exact number depends in part on what options the government exercises

with Litton and the results of a Litton-Grumman competition for sharing production quantities.

"We are guaranteed 30 percent of the production contract, an estimated 9,000 boards," says Ken Walch, site director at Benton Park. "The government wants this leader-follower arrangement. Litton will produce 40 percent of the boards and Grumman, 30 percent. The two companies will compete for the remainder.

"The program has the potential to exceed \$100 million. The higher figure is based on our winning that later competition."

Leader-follower arrangements are a method the Federal government uses to spur competition in the defense industry. The theory is that a competitive buy will be less costly than a sole-source procurement. In these days of the Federal deficit, the government aims to

make competitive as many contracts as possible. A side benefit is, the government has an alternative source for vital equipment.

The first Tactical Air Operations Module workstations are just now going into the field. Full scale production does not begin until 1989. "We are aiming to duplicate Litton's assembly process, right down to the test software," says Walch.

Litton is currently conducting another competition for analog printed circuit boards and power supplies. That competition will also involve a leader-follower formula, and Grumman has received the request-for-quotes.

"We've developed a good relationship," says Walch. "This could eventually bring in a lot of new business to Grumman on other Litton programs." ■

New Grumman Chassis To Speed Firefighters To Blazes

At the recent Fire Department Instructors Conference in Cincinnati, Grumman Emergency Products wheeled out a new custom fire pumper. The shiny new vehicle was built on the first Grumman-made chassis.

The pumper chassis and truck body are the handiwork of the Grummanites at Emergency Products' main Roanoke, Virginia, plant. With its telescoping aerial ladder, built in the nearby Vinton plant, this vehicle is 90 percent "made at Grumman."

Grumman Emergency Products will continue to obtain chassis for existing models from suppliers such as GM, Mack, and Ford. But the new pumper chassis will round out its product mix and enable Grumman to keep up with fierce competition. It will also afford more control over schedules and quality.

"We expect to save money since we are doing what our

chassis suppliers do: assembling the parts," says Bill Bruns, president of Grumman Emergency Products. "It also signals the changing nature of our operation. A few years ago, we didn't make aerial platforms, either. Now, we're the number-one-selling manufacturer of aerial platforms."

The pumper's body is made of stainless steel and the chassis is made of aluminum. It comes with an Allison automatic transmission, Rockwell axles, and a choice of engines: Detroit Diesel, Cummins, and Caterpillar. It also boasts a five-person enclosed cab, with an optional four-door, seven person sedan cab.

The new pumper is a "Class A" vehicle, the highest rating given by the National Fire Protection Association. It is built to last a minimum of 20 years in front-line use and to provide additional years in reserve.

Grumman's customers are primarily small to mid-size fire departments who have to go through a bid process. "A delay in delivery can be disastrous to the small department," says Bob Bryan, chassis sales manager, "because they may have to go through the same funding process all over again. And if they are severely short on equipment, they may turn to another manufacturer who can supply them right away."

Over a year ago, Grumman Emergency Products put together a "chassis team," made up of people from engineering, manufacturing, marketing, quality control and purchasing. They spoke to firefighters, fire chiefs and Grumman's independent dealer

organization in determining what features to put into the truck — with an eye toward easier operation, safety, and aesthetics.

"The chassis must be maneuverable, with extremely stable steering," says Bryan. "It must have excellent braking, and a sophisticated suspension system to prevent lean."

One quality improvement on the Grumman chassis is the ease of entry and exit from the cab, due to its low-profile design. Grumman widened, lowered, and deepened the step area to allow firefighters in heavy "turn-out" gear to get in and out rapidly, yet safely.

In marketing the new pumper

chassis, ads link it to the F-14 Tomcat and at firefighters' shows, the Grummanites wear orange flight suits.

After the show, the vehicle began touring the Midwest — Grumman sales representatives are demonstrating it to fire departments. "These independent representatives know their territories," says Bruns. "The vast variety of customers makes this a difficult market. Some departments have paid firefighters, some have volunteers, and others have both. Among volunteers, you find people from all occupations and walks of life." ■



New Business. This fire pumper is built on the first-ever Grumman chassis. It offers 20 years' life in front-line use. One quality improvement is the ease of entry and exit from the cab, due to its low-profile design. The new pumper is now making a sales-and-demos tour through the Midwest.

Unit Values

The Employee Investment Plan's unit values as of February 29 (compared to January 31 figures) were:

Equity Fund

4.201 (up from 3.929)

Fixed Income Fund

6.182 (up from 6.095)

Guaranteed Income Fund

2.717 (up from 2.695)

Company Stock Fund

\$19.25 (up from \$18.69)

Don't Back Into Trouble

A back-breaking job can be as big as lifting a 100-pound box or as small as reaching for a floppy disk. Once you hurt your back, it's mighty hard to make it right again.

For the past two-and-a-half years in Grumman's Medical Department, physiotherapist Linda Weintraub has treated many Grummanites with back problems. She spends two afternoons a week at Grumman.

Back injuries can be caused by something as simple as having to reach too far for something at your desk. Lifting, however, is the most common cause of back injury. "If you're going to lift something, keep your back straight, bend at the knees," says Weintraub. "Hold the weight close to your body and lift with your legs."

According to the National Safety Council, sitting puts more stress on your back than walking

or standing. The Council says to use a firm seat and sit so you rest your back against the chair. Get up occasionally and walk around. In your car, it's best to adjust the seat so you sit with your knees bent.

Poor posture is also a major cause of backache. Good muscle tone is important. Weak stomach muscles deprive your back of vital support. Stay in shape. Excess weight puts more stress on your back. Check with your doctor before you start any exercise program.

Grummanites who hurt their backs on the job or who have some general back problem should contact the Medical Department at (516) 575-2101, or their local medical office.

To avoid making the call, follow Weintraub's advice. "Keep yourself in good shape, plan out any job and approach tasks with good body mechanics."■



Getting Ready. Ben Richardson delivers cutting tools for a job on one of Glen Arm's current milling machines. Behind him, workers install electric wires for the Cincinnati milling machines purchased from Fairchild.

Glen Arm Adds To Its Tool Kit

Next week, Glen Arm Operations in Maryland will begin installing four computer-controlled Cincinnati milling machines. Grumman bought them recently from Fairchild Republic in Farmingdale, Long Island. Their \$3 million price-tag saved Grumman some \$7 million over the price of equivalent new five-axis machines. The machines will be cutting metal by August.

"This was a great buy. There was very little wear and tear on these machines," says Paul Causey, director of Glen Arm Operations. Glen Arm is the focal point of multi-spindle machining production for Aircraft Systems' Parts Fabrication Center.

"Those machines are just a half a notch short of the latest thing," he says. "The other \$7 million we would have had to spend to buy new ones would have bought us very little more in capability."

It took 28 truckloads to bring the machinery to Glen Arm. Each milling machine is a huge gantry. Mounted on tracks, the four gantries move up and down a common, 150-foot long bed that holds the blank metal plates or rough castings.

The four identical machines each have three cutting-tool spindles driven by electric, rather than older-technology hydraulic power. They have as much as three times the cutting power of all but the largest milling machines in Glen Arm.

Computers control the movements of the huge gantries and their cutting tools with surgical precision. They shape large pieces of metal, such as Grumman aircraft wing skins that are as much as 20 feet long, and can cut parts up to 50 feet long. Each machine can shape as many as three parts simultaneously.

By having one bed, one gantry can be making a specific cut while another is set up for the next cut. When the first cut is done, the gantry moves out of the way and the second moves into position.

Says plant manager Bob Valente, "The feed rate on these machines is three times faster for aluminum than any of our older Cincinnati's."■

Personals

To all my friends and colleagues I wish to thank you for your condolences, compassion and kind expressions of sympathy upon the death of my mother Lee She Wu. **Danny Wu**

I would like to thank all my co-workers, friends, GAA, Retiree Club, and ESO for all their prayers, uplifting phone calls and cards. Your kind expressions of affection and support were greatly appreciated during my recent illness. **Mike Francesco**

My family and I wish to thank all my co-workers, friends and ESO for their kind expressions of sympathy over the sudden passing of my son Chuck. **Pete Sciarabba and Family**

A very sincere thank you to those of you who shared our grief on the loss of my husband Gregory. Your kind expressions of sympathy will not be forgotten. **Kathleen Nadolny and Family**

I wish to thank all my friends, co-workers and ESO for their kind expressions of sympathy and thoughtfulness following the recent loss of my mother. **Jim Gallagher**

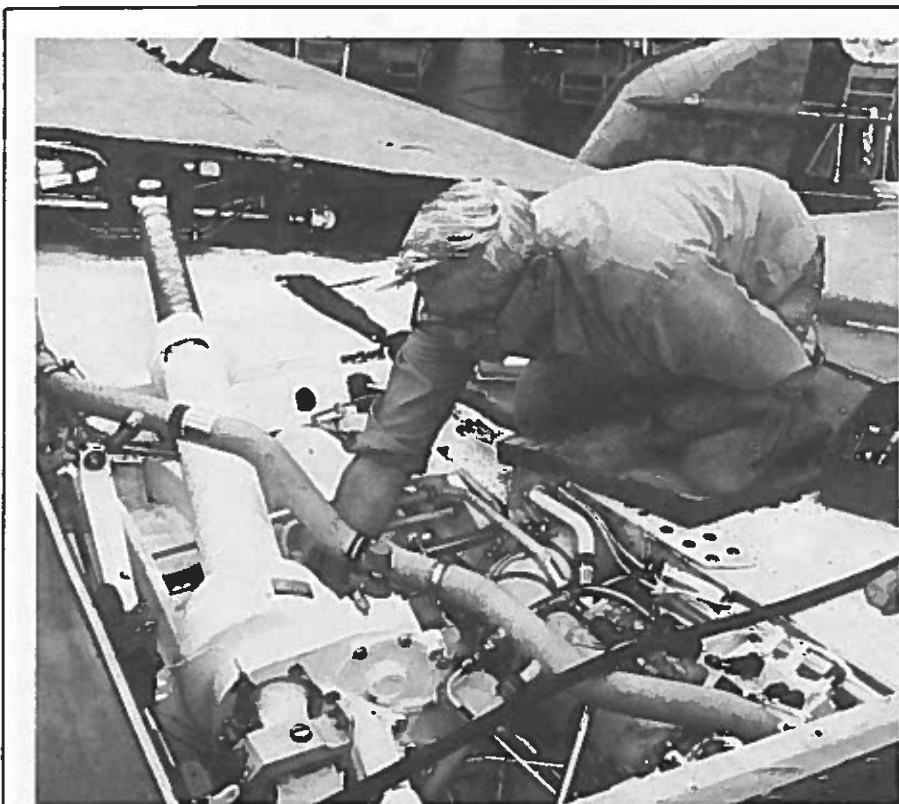
My sons and I want to thank all our friends, co-workers and ESO for sharing our grief on the loss of my wife and our mother Graciela. Your kind expressions of sympathy will not be forgotten. **Claudio Bosque and Sons**

My sincere thanks to all of you who helped me celebrate my impending retirement. Your presence and good wishes will be remembered long after my 35-year career at Grumman has ended. **Bill Trillo**

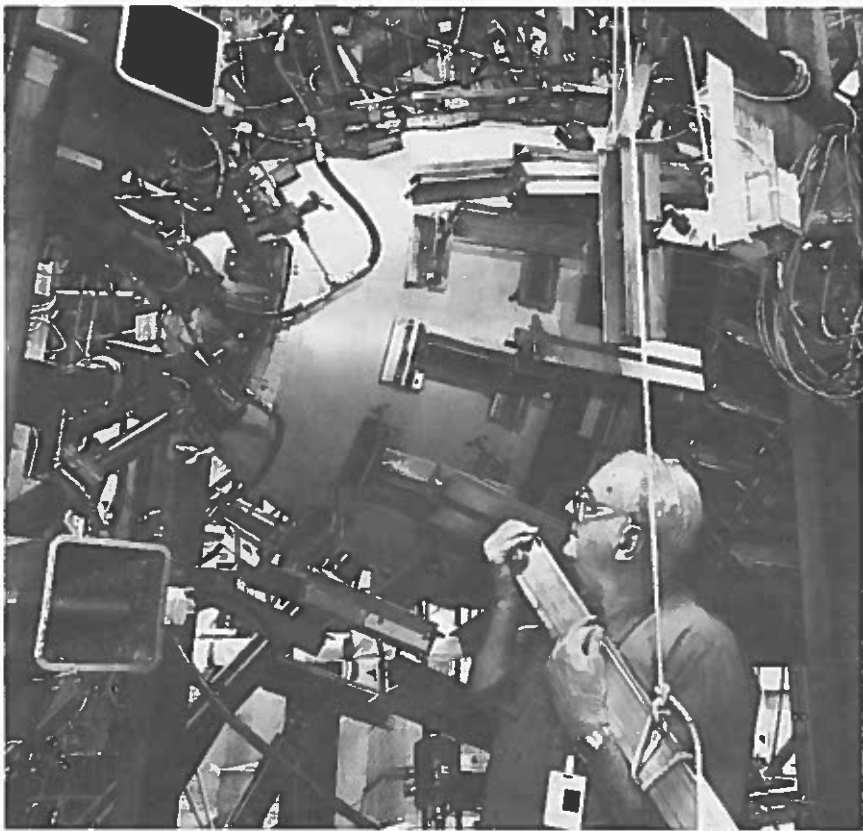
The family of Robert F. Loar wishes to express its sincere thanks for the outpouring of love, affection and sympathy. We thank you for the flowers, cards, telephone calls and visits. **Vi Loar and Family**



Don't Back Into Pain. Plan your movements before you try to lift objects. Carole Gehrich in Building 3, Bethpage, shows you how to keep your back straight and let your leg muscles do the work when lifting an object off the floor. (Photo by Bob Settles)



Diving Into His Work. Technician Maurice Greene runs tests on a new F-14A(PLUS) flight control system in Building 6 in Calverton. Once a plane passes these tests it is sent to the paint shop, flight tested, then delivered to the customer. (Photo by Karl Thoma)



How Tough Is It? In the Building 5 Structural Test lab, John Payton attached a strap to a rig of 55 hydraulic jacks. The jacks put pressure or tension on various surfaces of this A-6 nose section to see if it was strong enough to withstand speeds beyond those it would face in flight. The nose didn't crack under pressure. (Photo by Jim Wagner)

Health & Dependent Care Fair To Be Held This Month

The Grumman Medical and Human Resources Planning departments will co-host a Health and Dependent Care Fair on April 18, 19, and 20.

Over 30 exhibitors from Nassau and Suffolk Counties will be on hand to answer questions and provide information about their organizations' services.

Visitors can start a tour of the fair with a cholesterol screening. Just supply a small drop of blood and return in 12 minutes for the results. In addition, the American Red Cross will be doing blood pressure checks.

Are you caring for a person who needs constant attention? Maybe you need some time away. The Suffolk County Respite Care Program offers home care for your dependent while you take an afternoon or a weekend off. Representatives from the program will be at the fair offering further information.

Some of the other health care exhibitors will be: the Epilepsy Foundation of Nassau County, the American Diabetes Association, the L.I. Sickle-Cell Project, the L.I. Association of AIDS Care, the United Way of Long Island, the American Lung Association, the Nassau County Department of Health, the American Heart Association, and the Alzheimer's Disease and Related Disorders Association.

South Oaks Hospital and Brunswick Hall/Brunswick House will provide information on available alcohol and psychiatric

educational programs.

"We want people to know that although the Medical Department at Grumman may not always be able to help everyone itself, it can be the link to the organizations that can help," says Ada Colter, health care coordinator.

One of the dependent care agencies expected to attend the fair is the United Life Line organization. An emergency button is installed next to a dependent person's bedside. If the button is pressed, help is sent immediately.

The Empire State Medical, Science, and Educational Foundation Inc., the Foster Grandparents Project, the Community Program Center of L.I. Inc., and the Community Care Companions Organization are a few of the other participating dependent care representatives.

"We believe one-on-one interaction is the best way to get people the help they need," says Judy Sanders, dependent care coordinator. "The fair will give Grummanites a better chance at getting in touch with the right people."

The Health and Dependent Care Fair will be held in Buildings 1, 2 and 3 in Bethpage, from 11:30 a.m. to 4:00 p.m. Different organizations will be at each site every day. For more information, call Ada Colter at (516) 575-3723 or Judy Sanders at (516) 575-6675. ■

A-10 Has No Fear Of Heights

Pilots' lives and valuable aircraft may be saved after the Low Altitude Safety and Target Enhancement (LASTE) computer system is installed in the A-10.

Grumman Aircraft Systems Division is teamed with General Electric on this Air Force modification contract. While G.E. works on the target enhancement portion of the system, Grumman will conduct full-scale development and integration of the ground collision avoidance warning program.

Recently, an A-10 was lost near Nellis Air Force Base during low altitude maneuvering. This could have been averted with the LASTE system.

"The new computer will process the parameters from the aircraft's radar altimeter, inertial navigation, and air data system to determine the plane's position relative to the ground," says James Anthony, LASTE program manager. "If the maneuvering aircraft is in danger of impacting the ground, the system will send a hard warning tone into the pilot's headset."

The plane can fly as low as 50 feet; however, the tone will sound at 90 feet.

"The pilot can concentrate on his mission," says Elliot Kazan, A-10 program director. "He can safely maximize the low

altitude maneuvering capability of the aircraft."

G.E.'s gunnery computations are performed in the same computer. It provides an aiming index for guns and bombs and indicates to the pilot when to fire. "The computer will combine the ballistics of the weapons and other parameters to calculate when to shoot the gun or release the stores," says Kazan.

In addition, G.E.'s new Stability Augmentation System will give the A-10 a stabilized flight path to keep the gun on target during firing. "Gun fire reaction tends to lift the nose causing the aircraft to lose alignment with the target," says Kazan.

A Grumman team of about 40 engineers will design all the Grumman components at Bethpage. As proposed, manufacturing will be done at Grumman St. Augustine. In March 1989, the prototype will be installed in two A-10s at the Air National Guard Base in Syracuse, New York.

A production contract for the first 165 LASTE kits will be awarded by October 1988. The Air Force Air Logistics Center in Sacramento, California, operates the fleet of 655 A-10s. The center is expected to install the kits in all the planes by 1992. ■



A-10 Update. Grumman is teamed with General Electric for development of the Low Altitude Safety and Target Enhancement (LASTE) computer system for the A-10. Grumman is developing a system to warn the pilot if he is flying too low to the ground. G.E. is working on the target enhancement portion.

No Secret Codes

Starting tomorrow, April 16, some of Grumman's Florida sites will have new telephone area codes. The area code will be 407 for Melbourne Systems Division; Stuart Operations; and Technical Services in Titusville and the Kennedy Space Center.



That Nasty Memo You Sent Might Not End Up In The Garbage After All

Grumman begins aggressive recycling program to reduce its solid waste disposals

A hundred years ago, Long Island farmers had their own way of dealing with garbage. Whatever their hogs didn't eat, they burned or buried. In 1888, New York City dwellers were not so fortunate. Hogs had been banned from the Big Apple streets a few decades earlier. Street cleaners loaded refuse on scows and dumped it at the mouth of the harbor, hoping the tide would take it away. The problem of disposing of garbage still plagues us today.

For years, America has buried most of its garbage, but landfills are being shut down across the nation. They are filled to capacity and have become environmentally unsafe.

Towns across the nation are grappling with the question: how will we safely dispose of waste in the 21st Century? One thing is certain — the problem can't be buried in landfills.

"We are in the twilight of the landfill era," says Dean Cassell, Grumman Corporation vice president-Environmental Protection. "On Long Island, the

law mandates that all landfills must be closed by 1990."

Shipping waste out-of-state — such as the infamous voyage of the Islip garbage barge last year — is not the answer. "Other states are now beginning to limit the amount of interstate trash they will accept," says Cassell. "They might be a few years behind Long Island — but they will also be facing the problem of waste disposal in the next decade."

While towns decide what the next method of waste disposal will be, Grumman has taken the initiative and begun an intensive recycling program on Long Island. "Due to Grumman's efforts, there is much less solid waste entering the Long Island solid waste stream," says Cassell. "This may help prolong the life of those landfills likely to close prior to 1990."

The new recycling program is based on three objectives: reduce the company's waste, recycle appropriate materials, and dispose of what's left over. On Long Island, Grumman's waste

totals 12,500 tons per year — 8,500 tons in Bethpage alone.

"Solid waste disposal costs have skyrocketed and will continue to climb," says Cassell. The Town of Oyster Bay tipping fee — the charge to unload waste materials at an incinerator or landfill — has risen 150 percent in the last two years. In 1986 it cost \$32 a ton to use the landfill. In 1988 it is \$80 a ton and forecasted to go to \$120 a ton before year's end. "Including carter's costs, right now Grumman pays an average of \$135 per ton to dispose of solid waste," says Cassell.

'Solid waste disposal costs have skyrocketed and will continue to climb.'

Recycling is not new to Grumman. For years, it has been recycling metals at its scrapyard in Bethpage. After sorting the metal, the company sells it to scrap dealers. The biggest seller: aluminum. Grumman sells an average of 120,000 pounds of

aluminum a month to dealers.

All government-contracted items bearing precious metals such as silver are returned to the Federal government for recycling.

The company hopes to recycle 2,400 tons of metal this year by selling it to scrap dealers. The estimated savings in 1988 is about \$420,000.

As part of its new recycling program, Grumman will step up its recycling of wood and cardboard — about 500 tons this year. Most of the wood comes from shipping crates and pallets. Wood and cardboard are also sold to recyclers. If it was just thrown out with the garbage, it would cost the company about \$100,000 to dispose of.

Another ideal candidate for recycling is computer paper, commonly called green paper. These green-and-white perforated paper printouts can easily dwarf a Manhattan phone book. In recent years, this paper has been picked up twice a week at all Grumman Data Systems buildings. Data Systems' Holtsville facility, and Buildings

30, 35 and 2 in Bethpage bring in the most printouts — about 3,000 pounds a week each. It all gets sold in bulk to paper recyclers. This year, Grumman plans to recycle 900 tons of computer paper. It will save over \$100,000 in carting fees alone (see sidebar on next page).

For years, organic gardeners have been using coffee grinds and eggshells to fertilize their garden beds. Last year, Grumman started building compost piles for its landscaping needs. “It began as an outgrowth of the Town of Islip’s recycling program at Great River,” says Cassell. “We’ve begun recycling all our lawn clippings, leaves and tree trimmings at all our major Long Island facilities.”

Even though compost waste only accounts for about 100 tons or .8 percent of Grumman’s total waste, every little bit counts. The company is saving about \$20,000 in carting fees — and a few bucks in fertilizer and wood chips as well.

In the near future, Grumman will launch a bond paper recycling program in three plants — headquarters, Buildings 30 and 35 in Bethpage. “It’s just the beginning,” says Cassell. “These three buildings have been selected to be pilot sites. Once the kinks are worked out, we hope to expand the program to all Grumman sites — first on Long Island and then across the country.” (see sidebar)

Grummanites use reams of bond paper every day. Sooner or later, it ends up in the circular file. In fact, about 40 percent of solid waste is paper. The company aims to sell about 600 tons of bond paper to a recycling firm this year. That’s a lot of garbage that would normally cost about \$100,000 to dump in the landfills on Long Island.

All totalled, Grumman’s 1988 goal is to redirect 36 percent of its garbage or 4,500 tons through recycling. That could save hundreds of thousands of dollars in carting and tipping fees alone.

The company’s recycling program goes beyond cost savings. “As Long Island’s largest employer, it’s our corporate responsibility to take the initiative in recycling,” says Cassell. “The solid waste crisis is going to get worse before it gets better. Our actions will help lessen the burden on our neighboring communities.”

Recycling will eventually become part of everyone’s daily routine, predicts Cassell. “However, any recycling program will fail if no one participates. We’re counting on Grumman people to make that extra effort and make our recycling program work.”■

Recycling’s Time Has Come

Grumman’s Bond Paper Recycling Program will begin in corporate headquarters and Buildings 30 and 35 in the near future.

“As with any recycling program, a little extra effort is needed to make the program work. In the beginning, it might be a bit annoying to separate recyclable papers. However, we hope that it will become second nature after a while,” says Grumman Corporation Vice President-Environmental Programs Dean Cassell.

All participants receive a special green plastic folder. They are asked to put bond paper — originally destined for the garbage pail — into this legal-size folder. Every night, Facilities people will empty the

folder into special bins which will be picked up by a recycling firm.

If you work in an office area, you have plenty of opportunities to be a recycler. Just look at your wastebasket. Chances are about 40 percent of your trash can be placed in the green folder.

What can be recycled? All bond paper, office stationery, copier paper, note paper, personal computer paper, and calculator tape. One important exception: No classified material can be placed in the folder. That should be discarded in burn barrels. Remember that paper clips, staples and rubber bands have to be removed before placing the paper in the green folder.

Of course, there are a number of types of paper that can’t be recycled in this program. They include colored paper, newspapers, magazines, cardboard, coated paper, report covers, carbon paper, envelopes, green computer printout paper, and paper fasteners. For instance, you can’t place *Grumman World* in the green folder, because it is printed on coated paper just like magazines.

As with any new program, the kinks will have to be ironed out. Residents of the three Bethpage buildings will be asked for their suggestions before the Grumman Bond Paper Recycling Program is expanded to other sites.



Garbage Haul. About 40 percent of Grumman’s solid waste is bond paper. The new bond recycling program will begin in Buildings 30 and 35 and corporate headquarters in the near future. (Photos by Rich Breunig)

Garbage Facts

At the turn of the century, each American threw out around 1,500 pounds of garbage a year. Today, each American annually creates about 1,900 pounds of garbage. People from Florida, Michigan and California produce an average of over six pounds of garbage a day. New Yorkers, Pennsylvanians and Texans produce between 5-6 pounds a day each. Long Islanders contribute over six pounds of trash a day.

Getting Rid Of Green Computer Paper

If you are throwing out volumes of green computer printouts in the wastebasket, why not have it recycled instead? Call Bill Kelly of Salvage Operations, 575-2428, for more information.

Grumman’s Planned Solid Waste Management Program

	Tons Per Year	Percent of Total Waste
Compost Landscape	100	.8
Metal Waste	2,400	19.2
Computer Paper	900	7.2
Bond Paper	600	4.8
Wood and Cardboard	500	4.0
Total	4,500	36.0

Investment Plan Had A Stormy Year

For investors, 1987 was a heady year. Though Grumman's Employee Investment Plan (EIP) is designed for long-term savings, its four funds reflected some of the year's twists and turns.

This was the report presented to a full house at the EIP's annual meeting, held March 24 in the Grumman Headquarters auditorium.

The guaranteed income fund was the only one of the four EIP investment vehicles that posted a respectable overall return for the year. The fixed income fund did poorly for the first three quarters of the year, then reversed itself. The opposite was true of the equity fund. These reversals were due in part to the sudden plunge of the stock market on October 19.

The company stock fund had sharp ups and downs, particularly on October 19 and 20, when it went from \$24 down to \$17. It ended the year at \$17.31. Since the beginning of 1988, the stock has crept back up again. For instance, on April 6, the stock closed at \$23.75.

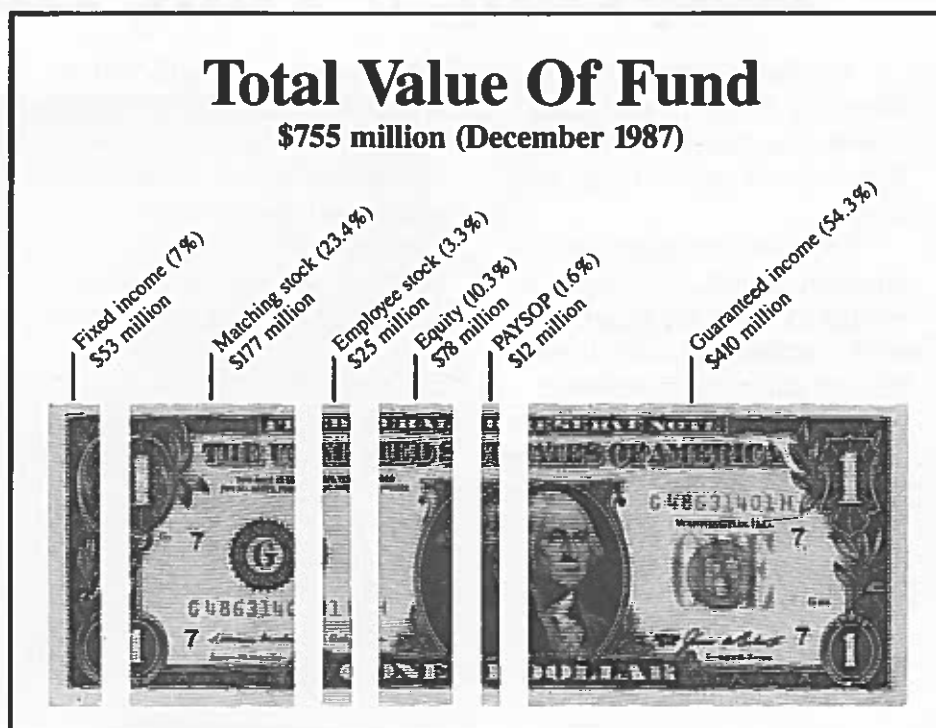
"Volatility is the buzzword in the financial markets these days," said Bob Howitt, a partner at First Manhattan Company, the equity fund's manager. "We regard that as an accurate reflection of investors' difficulties in figuring out how the world is going to look over the next 12 to 24 months."

During the first three quarters of 1987, the equity fund was up almost 30 percent, a continuation of its strong performance in 1986. However, in the last quarter, it dropped considerably. It wrapped up 1987 with an overall return of -1.1 percent — outperformed by the three major market indexes, the SEI Median, Standard and Poors 500, and Dow Jones Industrials.

First Manhattan buys stock in conservative businesses, aiming for above-average returns and below-average risks. "We were disappointed with the fourth quarter," says Howitt. "We thought with the quality level of companies in our portfolio, the fund would have outperformed a dreadful market."

The fixed income fund performed sluggishly for the first three quarters and picked up in the last. Still, with the year's return at 2.2 percent, the fund trailed its strong performance of the past three years and underperformed the three market indexes.

Rick Potter, senior vice president of Fiduciary Trust International, the fund's manager, attributed 1987's meager returns to rising interest rates and inflation. That translated into lower returns on bonds, particularly longer maturity bonds. Average maturity in the Grumman fund was 6.3



years at year-end.

"Even though our 2.2 percent doesn't look terribly good, compared to what could have happened in the market it doesn't look too bad," said Potter. For example, a 30-year treasury bond at the start of 1987 had a value of \$100; due to rising interest rates, it ended the year at about \$84. At the same time, it earned about eight percent, resulting in a net loss to the investor of eight percent.

There may be a comeback ahead: The fixed income fund earned a return of 4.9 percent during January and February of this year. Potter predicts interest rates will go down and the fund's rate of return for 1988 will be between 10 and 15 percent.

The guaranteed income fund remains the most popular investment vehicle among Grumman investors, totalling \$410 million. That's over half the EIP's total value of \$755 million as of December 31, 1987.

Provident National Assurance Company joined the list of guaranteed income fund managers. The other five companies

contracted to manage portions of the fund are Aetna, Home Life Insurance, Manhattan Life, Mutual Benefit Life, and Principal Mutual Life. The 1987 return of 11 percent is a blend of the interest earned.

In addition to the wild financial scene, the EIP continued to weather tax reform. The tax rules passed by Congress in 1986 went into effect in 1987, and the Internal Revenue Service issued new interpretations.

The amount of pretax income that you can put into the deferred compensation option (DCO) part of the EIP, through payroll deduction, is now limited to \$7,300. But you will only reach that limit in 1988 if you make \$49,999 in the lower bracket, and \$100,000 in the upper, according to the percentage of base pay you can contribute. Below \$50,000 total annual income, it is 14 percent; above that, it's seven percent.

Beginning in 1988, active employees are required to begin EIP withdrawals at age 70 1/2. The penalty for not doing so is a 50 percent excise tax on the amount you are required to withdraw that

year. Previously, only those who retired or otherwise left Grumman had to do so. This year, the EIP office will contact those active employees age 70 1/2 and older.

As of May, 1987, transactions are valued on the last day of the month in which the EIP office receives your transaction form. Before, the previous month's valuations were used for some transactions. Under that method, if the stock was valued at \$25 on March 31, and you filled out a withdrawal form on April 15, you were entitled to that \$25 amount — even if the stock dropped several points. The change was made because of the increased volatility of Grumman stock and the stock market.

The way shares are valued in the company stock fund also changed. During abnormally active trading, when the fund manager has to sell shares on the open market, the unit value will be the average price of the proceeds.

This is the case even when a stock sale continues for several days into a new month. During months of normal trading, the unit value is the average price of the stock on the last day of the month.

The company matching contribution started the year at 59 percent, dropped to 57 percent in the second quarter, 53 percent in the third and 50 in the fourth. The match is tied to company performance, with a 50 percent floor and a 100 percent ceiling.

Among other news, Grumman Vice Chairman Will Bischoff and Vice President-Secretary Bob Bradshaw stepped down from their posts as trustees of the company stock fund. Taking their place are Bob Denien, vice president—Integrated Logistics Support, Aircraft Systems Division, and Bob Foster, director of Personnel. Vice President-Audit Howard Dunn continues as a trustee.

A booklet outlining the plan's performance will be available next month. You can get yours by writing to C15-GHQ. ■

Ask The Experts

Many times we make transactions on the 15th or 20th of the month. With everything so computerized, why can't we get the values for that day's index — rather than wait for the end of the month?

The Employee Investment Plan is not a financial service — it is a benefit. It only obtains monthly valuations, in keeping with the plan's setup as a long-term savings plan. In addition, all contributions are made by payroll deductions — which are computed when people are paid (weekly, biweekly, and bimonthly).

"The question is, would it be appropriate to spend the money to achieve daily valuations when we're dealing with a plan whose principal

goals are very much longer term than that?" says Bob Bradshaw, vice president and secretary of Grumman Corporation. "We feel what we do is in balance with the design of the plan."

Couldn't a preliminary valuation be made before the end of the month?

"In a market like this, we can't make projections of the month ahead," says Mike DeVito, manager of Pension and Investment Plans. "We do have estimates, in percentages, of how the funds have done 10 days following the end of the month. We do put them on the 575-4400 number — as soon as the fund managers get the information to us."

Why can't a spouse's name be added to your EIP account when you retire?

The Grumman EIP must conform to regulations set by the Internal Revenue Service. The most important law is the Employee Retirement Income Security Act (ERISA). ERISA mandates that only the plan member's name can be put on an account. If a plan were to allow spouses' names to be added, the IRS would disqualify it from its special tax status.

If a tender offer is made for a takeover of Grumman, who would vote the stock that is in the EIP?

The legal responsibility rests with the trustees of the company stock fund. They are required to act solely in the best interests of the plan participants.

1988's Top Students Win Scholarship Competition

High School seniors look forward to proms and year-end parties, yearbook signings and graduation ceremonies. Parents scramble to figure out how they will finance four years of college in today's economy.

A dozen high school seniors are helping their parents breathe a little easier this year. They are winners of the 1988 Grumman Science and Engineering Scholarships.

The competition is open every year to high school seniors in Nassau and Suffolk counties on Long Island and Grumman dependents across the country.

This year, there were 166 applicants. The group was narrowed to 24 finalists. The 12 winners receive \$6,000 per year, summer employment and a guaranteed job offer at Grumman after graduation. This year seven of the winners are Grumman dependents.

Under a policy that began last year, the remaining 12 finalists receive \$1,000 a year each for four years and summer employment at Grumman. In this group, five students are dependents.

Should a full scholarship student drop out of the program, a finalist will receive the remainder of the scholarship money.

The winners are all Long Island students. The Grumman dependents who won scholarships are: Steven Cimaszewski, Michael Cohen, Steven Goldblatt, Alfred Leach, Gregg LoCascio, Karen Marx, and Alexander Meyer.

Winners of scholarships in the open competition are: Charles Goetz, Alexander Lee, Christine Legge, David Musicant, and Peter Rosenbaum.

Scholarship finalists must earn a combined verbal and math Scholastic Aptitude Test (SAT) score of 1,200 or higher. (1,600 is the highest possible score.) Students were also required to take the National Engineering Aptitude exam.

All of the students are required to be in the top 20 percent of their classes. Final selection is based on the student's class rank, aptitude test results, a 10-minute interview and other criteria.

These are the seven Grumman dependents who won scholarships:

Steven Cimaszewski is the son of Tadeusz Cimaszewski, the manager of Media Control for Data Systems. Steven is in the top one percent of his class at St. Anthony's High School, Smithtown. He plans to study mechanical engineering.

"Steven is an ambitious, persevering and highly motivated student. He is meticulous and has an intense interest in learning," says

his guidance counselor.

A member of the National and Spanish Honor societies, Steven is also editor of his school paper.

Michael Cohen is the son of Janet Schuman, a software engineer/group leader for Aircraft Systems. "Michael is a very bright young man. He is capable of superior work," writes his physics teacher. Michael is tenth out of 220 students in



his class at John F. Kennedy High School, Plainview. He plans to study electrical or aerospace engineering.

Michael is also very active in Students Against Drunk Driving (SADD) and is a member of Project Outreach, a community service organization.

Steven Goldblatt is the son of Peter Goldblatt, Reliability, Maintainability and Survivability group leader for Aircraft Systems. He is in the top two percent of his class at Harborfields High School in Greenlawn.



Steven plans to study industrial engineering in college.

"Steven is a highly intelligent, strongly motivated student who is dedicated to academic excellence," comments his counselor.

Steven has received awards in excellence for classwork in History, Spanish and Technology.

He is a member of the Future Leaders of America Club, and does volunteer computer work for Huntington Hospital.

Alfred Leach IV is the son of Alfred Leach III, an electromechanical designer for Aircraft Systems.



Alfred has received a commendation from the National Merit Scholarship Program for his PSAT scores.

He is in the top four percent of his class at Huntington High School and plans to study computer science.

In addition to singing with his church choir, Alfred is very interested in cycling. He has ridden tours in New England, including a 600 mile tour to Maine and back.

Gregg LoCascio is the son of Frank LoCascio, the director of Information Software Systems for Data Systems. Gregg is in the top nine percent of his class at Commack High School South. He will study mechanical engineering. "He



was always articulate and displayed 'mathematical intuitiveness.' Although he was able to solve problems using one technique, he was always willing to look at alternative approaches to the solution," writes his math honors teacher.

Gregg is the vice president of the National and Computer Honor societies. He placed first in the Suffolk County math contest, and is the co-editor of the school newspaper.

Karen Marx is the daughter of Warren Marx, a section head for Aircraft Systems. "When her class was asked to compute a difficult problem, most students fumbled with it and came up with long, cumbersome answers," says her



calculus teacher. "Karen saw a simple, elegant solution. The class quickly abandoned their solutions and adopted the 'Marx' method."

Karen is in the top one percent of her class at Smithtown High School West. She plans to study mechanical engineering.

She has been secretary of the student council for the past three years and is a member of the National Honor Society. She also enjoys painting. One of her designs will be painted onto the Smithtown train trestle.

Alexander Meyer is the son of Walter Meyer, a senior systems analyst for Grumman Data Systems.



He is in the top six percent of his class at Garden City High School. He plans to study computer science. A National Merit Scholarship semifinalist and a

member of the National Honor Society, Alex is layout editor for the yearbook. "I was attracted to computers at the age of 10 because I wanted to learn to use their power to create visual images," says Alex.

Alex enjoys juggling, skateboarding and collecting music. He also designed and built a local skateboard ramp.

There were five scholarship winners in the open competition.

Charles Goetz III is salutatorian of his class at Kings Park Senior High School. He will choose engineering, computer science or physics as his major in college. A member of the National Honor Society, Charles is also a member of the Science Club and the sports editor of the high school yearbook.



Alexander Lee is valedictorian of his senior class at H. Frank Carey High School, Franklin Square. He is a

National Merit semifinalist, and has received the highest honors from the Long Island Science Congress. Alexander is also the recipient of the Good Citizen Award from the Daughters of the American Revolution. He will study either aerospace/aeronautical or mechanical engineering.

Christine Legge will study mathematics and computer science. She is in the top one percent of her class at Smithtown High School East. A member of the National and French Honor Societies, Christine played varsity softball for three years.



She is also sports editor for her school paper, and has written several articles for a local publication.

David Musicant plans to study computer engineering. He will be valedictorian at Freeport High School. David is a National Honor Society member and a National Merit Scholarship semifinalist. He has received gold medals from the Nassau



County Interscholastic Mathematics League and is an Eagle Scout.

Peter Rosenbaum is valedictorian of South Side High School, Rockville Centre. He will major in engineering and applied science. Rosenbaum has been a member of the National Honor Society for four years and has received a math and science award from Rensselaer Polytechnic Institute.

He has played with the Long Island String Orchestra and has had several science papers published.

Five dependents won \$1,000 a year in tuition assistance.

Thomas Baran is the son of Robert Baran, the director of Manufacturing Operations for Grumman Melbourne Systems. Thomas will graduate from St. Augustine High School, Florida. He plans to study electrical engineering.

Eric Giroux is the son of Gregory Giroux, a group leader in E-2C Operations Support for Aircraft Systems. Eric will graduate from Harborfields High School, Greenlawn, and will major in engineering.



(Continued on Page 10)



In '44, \$600 Scholarship Paid For Full Year's Tuition At MIT

What can you do with \$600? How about pay for a year of college tuition at one of the top schools in the nation?

Impossible today, but that's what it cost in 1944. For Dick Feyk, Bob McConaughy, and Dick Scheuing, three of the original scholarship winners at Grumman, that \$600 might as well have been \$60,000. They just didn't have it.

"My folks spent months wondering how on earth they were going to finance my education," says McConaughy, Joint STARS senior software systems engineer.

After graduating from Malverne High School, McConaughy attended Massachusetts Institute of Technology and studied electrical engineering. "The world was coping with World War II," says McConaughy. "Not just anyone could afford to go to college."

In 1944, Grumman President Leroy Grumman and Vice President and Chief Engineer William Schwendler laid out the guidelines for Grumman scholars in a six page brochure.

The scholarships were originally offered to 10 students in Nassau and Suffolk counties on Long Island who planned to attend engineering school.

"These awards are being offered to encourage talented and ambitious graduates of Long Island schools to enter the field of aircraft engineering, and eventually to further the development of aviation on Long Island," wrote Grumman, in the opening letter of the brochure.

In 1944, there were 30 candidates. The scholarship paid the student's full tuition and laboratory fees. In 1977, full support ended. The scholarship now pays a maximum of \$6,000 per year.

One of the requirements of the scholars, then and now, was to work at Grumman during the summer.

McConaughy spent two summers in the military and two at Grumman.

"I drilled holes in the skins of the F-8 Bearcat," he recalls. "The following year, I was evaluating instruments for the Rigel missile."

"One of the biggest advantages to the scholarship program is working in the industry before graduating," says McConaughy. "We were able to approach our studies more practically."

After graduation, a dozen interviews, and three job offers

from other companies, McConaughy was hired by Grumman and continued working on the Rigel missile.

He later got his master's in applied math from Adelphi University on Long Island.

"It sure made a difference in my life," says Feyk, program director, A-6 Development. "My goal was to get into Cornell. Somehow, some way, my family would have gotten me there. But the scholarship made life a lot easier."

"I can remember after the exams and the interview were over, I just waited," he recalls. "I still have the telegram they sent me framed and hanging on my wall at home."

Feyk graduated from Cornell University with a bachelor's in mechanical engineering. He was hired by Grumman to work in the Stress department.

"Less than half of my graduating class had job offers," says Feyk. "A lot of guys were taken out of college and put into the service. When the war was over, they came back and filled most of the jobs. I was very happy to have a place to go."

Feyk later earned his master's in applied math from Polytechnic Institute of Brooklyn.



A Scholarly Gent. Dick Scheuing, deputy director of the Office of Corporate Technology, attended Massachusetts Institute of Technology. Photo inset: Scheuing in 1944. (Photo by Marie Trimborn)

In addition, he attended the Program for Management Development at Harvard.

"None of my immediate family had attended college," says Scheuing, vice president and deputy director of the Office of Corporate Technology. "I was always fascinated by airplanes. Charles Lindbergh was one of my heroes," says Scheuing. "But I never imagined myself going to college until the opportunity of the scholarship came along."

Scheuing entered the honors program at Massachusetts Institute of Technology. In four years, he received his bachelor's in aeronautical engineering and a

master's degree in aeronautics and astronautics. He later earned his Ph.D. He also attended the Advanced Management Program at Harvard.

"I would hate to be competing with the Grumman scholars of today," says Scheuing. "The students are brilliant and very well accomplished. They are seeking a lot of challenge in their work. I hope they are as fortunate as I was in finding it." ■

Class Of 1988

(Continued from page 9)

Robert Hendrickson is the son of Ronald Hendrickson, a technical specialist in Aerodynamics for Aircraft Systems. After graduation from Plainedge, L.I., High School, he plans to study computer science.



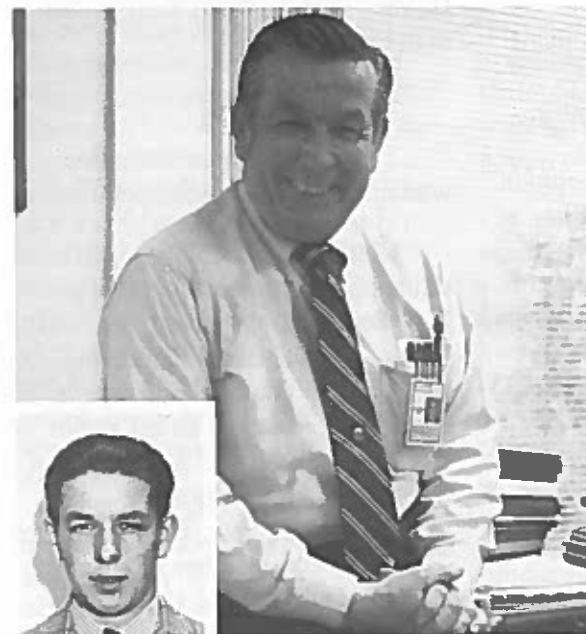
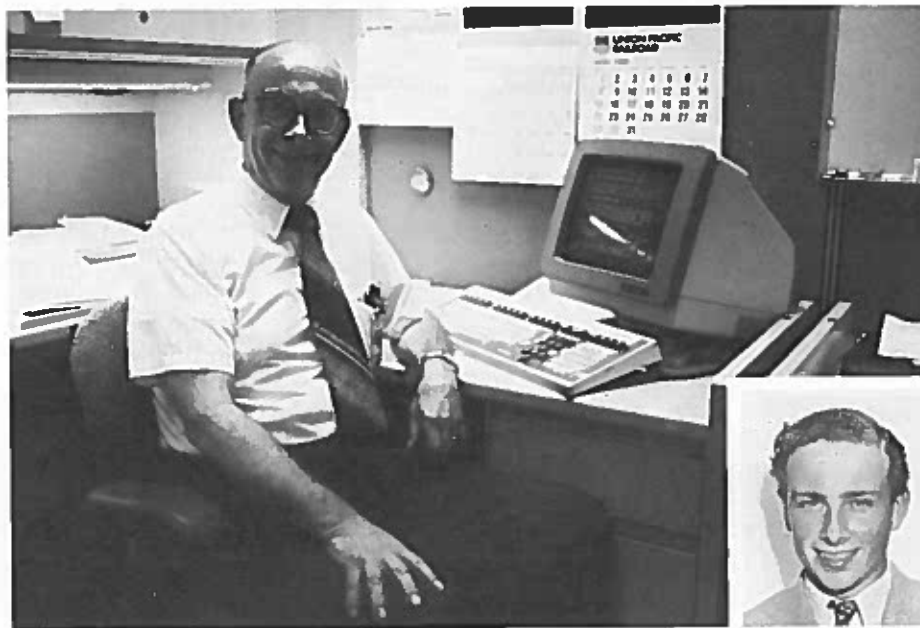
Carol Mintz is the daughter of William Mintz, a senior technical coordinator for Aircraft Systems. Carol will be salutatorian at Brentwood High School. She plans to study electrical engineering.



Jennifer Cabble is the daughter of Howard Cabble, a senior engineer for Aircraft Systems. After graduating from Newfields High School, Coram, Jennifer will study electrical engineering.



The seven other finalists, all from Long Island, are: **Keith Costorf** of Bayport-Blue Point High School; **Catherine Doyle** of Our Lady of Mercy Academy in Syosset; **Susannah Gardner** of Bellport High School; **Timothy Onders** of Northport High School; **Ruth Scrandis** of Westbury Senior High School; **Scott Weiss** of W. Tresper Clarke High School in East Meadow; and **Ging-Li Wang** of Syosset High School. ■



Winning Paved The Way. Grumman scholarships sent Bob McConaughy, (top), senior software systems engineer for the Joint STARS program, to the Massachusetts Institute of Technology. Dick Feyk, program director for A-6 Development, studied mechanical engineering at Cornell University. Photo insets: McConaughy and Feyk in 1944. (Photos by Bob Sagliocca and Marie Trimborn)

It Pays To Buckle Up

In a letter to Grumman people, Grumman President John O'Brien, Nassau County Executive Thomas Gullotta and Suffolk County Executive Patrick Halpin have praised Grumman people for their support of the seat belt awareness program earlier this year.

"We are very pleased to know that the program was a success, and we hope and encourage all your family and friends to start a lifelong habit to always buckle up," they wrote. "We appreciate your cooperation and participation in this lifesaving program, and encourage you to continue improving your safety on our roads by buckling up."

At the outset of the program, Grumman Security reported that 46 percent of the drivers entering the gates near Buildings 2, 30, and headquarters were wearing seat belts. A second survey performed after the awareness program showed that 52 percent were buckled up.

"Last year more than 300 of our neighbors died on the highway and over 40,000 were seriously injured as a result of motor vehicle crashes in Nassau and Suffolk counties," they wrote. "However, this serious problem can be lessened and all of us can lower our risk of injury and death significantly, simply by using our safety belts each time we drive or are a passenger in a car or truck."

Obituaries

Gennaro Penna of Maintenance Routine, Bethpage, Corporate Services Division, died March 7 at the age of 54. He had been with the company since 1986 and resided at 521 Glen Ct., Oceanside, N.Y.

Edmund P. Murray of ILS Site Requirements, Melville, Aircraft Systems Division, died March 18 at the age of 54. He had been with the company since 1965 and resided at 2089 Abbot Ave., Merrick, N.Y.

Retiree Obituaries

Frank Aimetti of 25 Grey Rock Dr., Greenwich, Connecticut, died Feb. 25, 1988. He retired in 1981.

George Batik of 503 Shadyside St., Lehigh Acres, Florida, died March 3, 1988. He retired in 1972.

Andreas Baudendistel of 308 Martin Pl., Bellmore, N.Y., died in Oct. 1987. He retired in 1975.

Jack D. Blum of 45-25 Kissena Blvd., Flushing, N.Y., died March 8, 1988. He retired in 1982.

Percy Carl of Pine Hollow Rd., Oyster Bay, N.Y., died in Feb. 1988. He retired in 1965.

Harold B. Charlton of 7 Quaker Path, Huntington, N.Y., died March 1, 1988. He retired in 1977.

Rhodes H. Copithorn at RD 1, Box 272, Martville, N.Y., died March 5, 1988. He retired in 1982.

Joseph F. DeRiso of 156 W. John St., Hicksville, N.Y., died Feb. 27, 1988. He retired in 1964.

John W. Fritz of 137 Oak St., Floral Park, N.Y., died March 17, 1988. He retired in 1983.

John L. Froland of 2910 NW 62 Ave., Margate, Florida, died March 11, 1988. He retired in 1984.

Horst J. Fuhrmann of 211 Hoffman St., Franklin Square, N.Y., died Feb. 18, 1988. He retired in 1987.

William T. Gallagher of 101 Smith Ave. Holbrook, N.Y., died Feb. 12, 1988. He retired in 1971.

James H. Green of 71 Pond Pl., Babylon, N.Y., died Feb. 23, 1988. He retired in 1974.

Herbert Gulbrandsen of 32 Magro Dr., No. Babylon, N.Y., died March 11, 1988. He retired in 1977.

John H. Gutkes of 355 Dorchester Dr., Lakewood, N.J., died March 3, 1988. He retired in 1985.

Hollis L. Hatley of 23 Redmond Ave., Bay Shore, N.Y., died Feb. 20, 1988. He retired in 1973.

Leighton Johnson of 2610 Mueller Ave., San Jose, California, died Sept. 26, 1987. He retired in 1976.

Frederick Kindl of 357 W. Osceola La., Cocoa Beach, Florida, died Feb. 22, 1988. He retired in 1978.

Albert P. Koval of 418 Landis St., Cooperburg, Pennsylvania, died Feb. 21, 1988. He retired in 1977.

Arthur H. Kramer at P.O. Box 68, East Norwich, N.Y., died Dec. 20, 1987. He retired in 1973.

Harold J. Leonhardt of RD 1, Telegraph Rd., Bath, N.Y., died March 17, 1988. He retired in 1970.

Phillip LoPinto of 179 Washington Ave., Mastic Beach, N.Y. died Feb. 20, 1988. He retired in 1980.

William C. May of 2326 Washington St., Hollywood, Florida, died March 1, 1988. He retired in 1985.

Louis A. Mazzocchi of 16 Balfour Dr., Bethpage, N.Y., died Feb. 18, 1988. He retired in 1977.

Charles R. Miskell of 1812 Fairfax St., Elmont, N.Y., died March 7, 1988. He retired in 1978.

John R. Murray of 209 Rutgers Ave., Swarthmore, Pennsylvania, died Feb. 13, 1988. He retired in 1968.

Leon A. Parker at Rt. 3, Box 394, Hertford, North Carolina, died March 2, 1988. He retired in 1971.

Teofil W. Rzeszut of 19 George Ave., Hicksville, N.Y., died Feb. 19, 1988. He retired in 1981.

John L. Schenna of 139 Ave. B, Holbrook, N.Y., died Feb. 29, 1988. He retired in 1987.

Charles Schubert of 40 Frederick Ave., Bay Shore, N.Y., died March 1, 1988. He retired in 1972.

Warren H. Stark at Rt 7, Box 68, Dublin, Georgia, died Feb. 19, 1988. He retired in 1985.

Raymond C. Strassburger of 8398 Cherish Dr., Sebastian, Florida, died Feb. 16, 1988. He retired in 1973.

Joseph J. Straub of 3072 Roxbury Rd., Oceanside, N.Y., died Feb. 23, 1988. He retired in 1970.

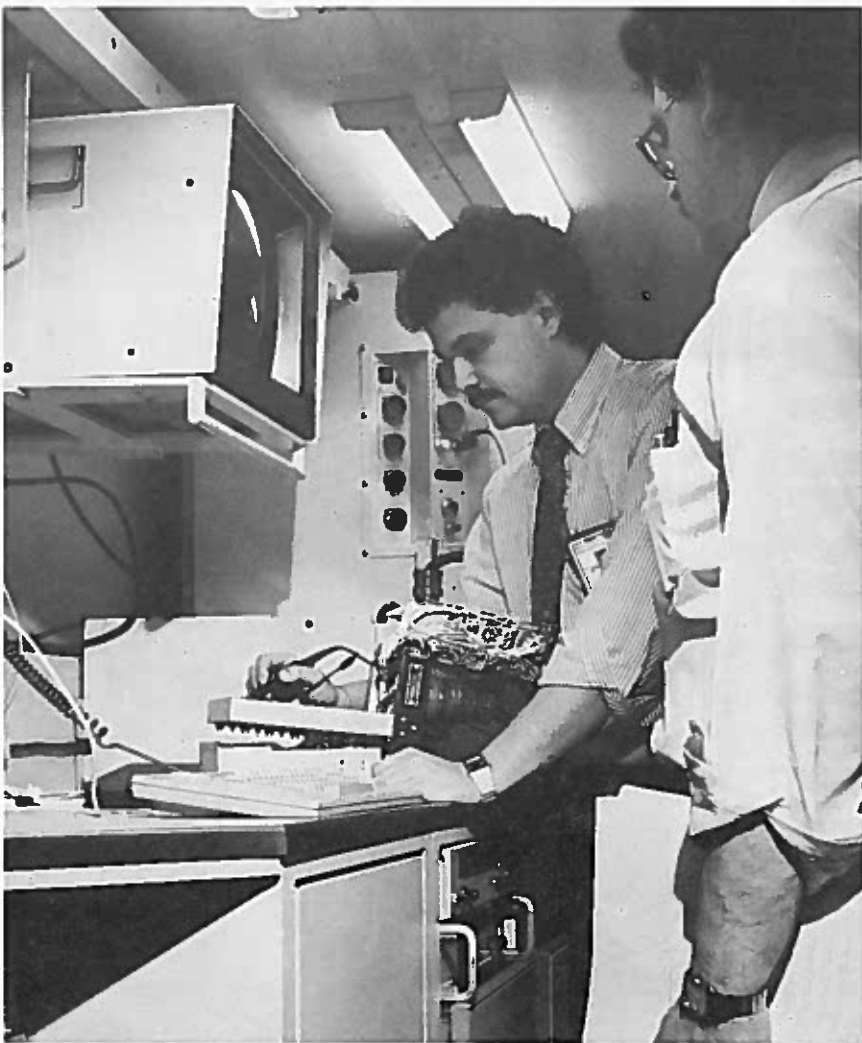
Louis Terrosi of 14 James Ct., Syosset, N.Y., died Feb. 13, 1988. He retired in 1972.

Phillip Tortu of 501 B-Round Pond Rd., Ronkonkoma, died Feb. 27, 1988. He retired in 1987.

Nicholas J. Umreiko of 46 Filbert La., Palm Coast, Florida, died Feb. 23, 1988. He retired in 1985.

Arthur I. VanTassel of 6161 42nd Ave., St. Petersburg, Florida, died Sept. 30, 1987. He retired in 1963.

William E. Weaver of 17 Hardy La., Westbury, N.Y., died March 7, 1988. He retired in 1982.



Final Check. Project leader Mike Biscuiti (R) and test program set (TPS) engineer Tony Weiner ran some last tests in the truck-borne Base Shop Test Facility unit of the Intermediate Forward Test Equipment (IFTE). They were verifying a TPS for a circuit card from the Hawk missile system. These tests were conducted before this IFTE unit left for the Letterkenny Army Depot in Chambersburg, Pa. It's now in the midst of a 10-week Army development test program. (Photo by Bob Settles)

Readership Survey

We don't want to do all the talking. We'd like to know what you think about the things you see in these pages. Your comments, suggestions and complaints are welcomed. Please take a few minutes and give us your opinions.

Article	Great	Good	Poor	Didn't Read
Cogeneration Plant (P. 1)	☐	☐	☐	☐
OV-1 Mohawk (P. 2)	☐	☐	☐	☐
Emergency Products (P. 3)	☐	☐	☐	☐
A-10 (P. 5)	☐	☐	☐	☐
Recycling (P. 6)	☐	☐	☐	☐
EIP Annual Meeting (P. 8)	☐	☐	☐	☐
Scholarships (P. 9)	☐	☐	☐	☐
Chairman's Letter (Back Cover)	☐	☐	☐	☐

Suggestions For Future Articles:.....

Comments About This Issue:.....

Name

(Required If You Wish A Reply) **Ext.**.....

☐ Retiree **Division**.....

Mail to: Grumman World, A22-GHQ
1111 Stewart Ave., Bethpage, N.Y. 11714

GrummanWorld

April 15, 1988



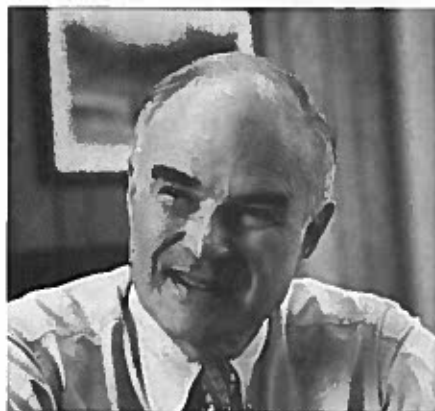
Photo by Bob Settles

He's Got Connections

It's Tom Searles' job to make the right connection — hundreds of them.

Searles is an assembler at Electronics Systems' Building 44 in Great River, Long Island. He is finishing the wiring of a ground support equipment called a pallet ID panel. It takes a number of months to assemble one of these panels. Searles puts a pin at the end of each of these wires then attaches the head connectors to the pins. Once he secures all the connectors, the panel is ready for final test and delivery.

A Letter From The Chairman



Grumman's business falls basically into two areas; both have their roots in the company's earliest days. The first is the electronics systems aircraft and its high-technology offspring. The second is a group of products that are not so high-tech, but are nevertheless vital to the stability and flexibility of our company. These products — trucks, boats and emergency vehicles — are made by Grumman Allied.

Grumman was incorporated in 1929. The following year, to meet payroll and provide some cash, the company built 25 aluminum trailers. Sixteen years later, Grumman picked up the thread and expanded into the aluminum truck body business. At the time, there were about two dozen competitors in the market; today, there are only five. With deliveries of 12,900 trucks last year, Grumman is very strongly in first place with about 60 percent of the total market for aluminum walk-in trucks.

The LLV, the Long Life Vehicle we're building for the U.S. Postal Service, is more than doubling the size of our truck business. The profitability of the Allied Division is increasing substantially now that the LLV is out of development and into full production. Last year, 7,500

LLVs were delivered. This year, with production at the goal of 95 per day, we'll deliver more than 18,000.

Several of our fleet owners are field testing demonstration units of a commercial version of the LLV. The response has been encouraging, and we are considering the introduction of this new product line toward the end of the year. It could be another important expansion.

Aluminum boats have a long and honorable history in our company, too. Canoes started as a post-World War II project. They provided work and helped use up stockpiles of aluminum; they were an immediate success. Today, we're building nine different boat lines — including 15 canoe models and a pontoon party boat. Last year was a record year with sales of 18,200 boats. We've enhanced our product line to appeal to a wider market. For instance, last fall Grumman offered something for the first-time buyer: a boat, trailer and motor sold together as a package.

Our fire engine business — Grumman Emergency Products — is a newer member of the Grumman family. When we acquired this business, it was just one of the medium-sized producers. Today, with 100 manufacturers out there competing for a total market of 3,500 trucks, we have risen to become the fourth largest factor in the industry. We have made the investment to develop a high quality, innovative line of products so that we can even challenge the three companies that are left in front of us.

The fire engine business has yet to achieve proper profitability levels, and that is certainly its challenge today. However, it has had a special usefulness to Grumman overall. In many areas of the world, where other

Grumman products were not finding an immediate market, fire engines have been our door opener.

Today, for example, we are in the midst of trying to put together a joint venture to produce fire engines in Shanghai. This would be a major international step for us and an entree into the huge China market. Our friends in China first came to know us through our fire engine discussions, and our Peace Pearl aircraft contract could be viewed as a result of those discussions. It's another example of how interwoven the various parts of Grumman can be.

For years, Grumman Allied was a kind of poor relative in the Grumman family. During the 1970s and early '80s, through acquisition or off-shoots from the high-tech side of the house, we tried to move the company away from its dependence on the vagaries of military contracts. Sadly, instead, Grumman Allied became the home of some of our worst business disasters.

But from these experiences has risen a strong and revitalized division, a substantial force in the creation of the Grumman of the 1990s. Allied has taken advantage of Grumman's long-term understanding of aluminum and its special engineering and marketing expertise to become an efficient producer and a very effective competitor.

John C. Bierwirth
Chairman

GrummanWorld

Grumman Corporation
A22-GHQ
Bethpage, N.Y. 11714

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